



Molluscan Shellfish Management Plan

Project Proposal for the NOAA Coastal Services Center
Coastal Management Fellowship

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A joint proposal between the
South Carolina DHEC-Office
of Ocean and Coastal
Resource Management and
the South Carolina
Department of Natural
Resources



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I. Background/Introduction

Although shellfish are abundant throughout coastal South Carolina, an oyster survey conducted by the federal government over one hundred years ago reveals that the resource was once significantly more prevalent. If this negative trend continues, our coastal waters could be deprived of a significant resource that provides invaluable environmental services and economic value. Molluscan shellfish, like oysters, are filter feeders that can cleanse up to thirty gallons of water per day per adult animal. In addition, oyster reefs provide valuable habitat for many marine species, as well as protecting marshes and shorelines from erosion. Of the contributing factors to resource decline, the effects of overharvesting could most readily be mitigated through proper replanting strategies and management measures that would enhance the resource and inhibit degradation.

The decline of the commercial oyster canning and shucking business exacerbates the present situation. At one time there were twelve oyster canneries in the state. They gradually declined in numbers and the last one closed about fifteen years ago. These canneries supplied a ready supply of oyster shells for replanting. Centuries of oyster cultivation experience have proven oyster shell to be one of most desirable materials (called *cultch*) for attachment and subsequent growth of young oysters. During the spring and summer months, oysters spawn and release free-swimming larvae, called spat, into the water column. The spat are carried by tide and current, and after spending about two or three weeks moving in the water column, seek a suitable surface upon which to attach and begin building their shells of calcium carbonate. Unless disturbed, they will spend the remainder of their life cycle where they have attached. With the demise of the canneries, a large portion of the shell supply for cultivation and husbandry has disappeared. Today, most oysters consumed in the state are eaten at restaurants and backyard oyster roasts with most of the leftover shell ending up in driveways or landfills. With a scarcity of used shell, it is difficult to adequately replant beds. A shell recycling effort is underway by the South Carolina Department of Natural Resources (SCDNR), but it is underfunded and understaffed. Of particular concern, although restaurants and large private oyster roasts are often amenable to contributing shell to the recycling effort, is the lack of staff, equipment, and funding to transport shells to the beds to restore substrate.

Two agencies share responsibility for the oyster resources of the state. The South Carolina Department of Health and Environmental Control (SCDHEC) is concerned with the public health aspects of shellfish marketing and consumption, and through the state coastal management program, the Office of Ocean and Coastal Resource Management (OCRM) is concerned with the physical disruption of the shellfish beds through its regulatory jurisdiction of salt marsh critical areas. The previously mentioned SCDNR focuses on the permitting of commercial harvesters, regulation of recreational users, and designating public and commercial shellfish grounds. SCDNR also engages in some limited replanting efforts, but this program has never been adequately funded. Despite positive working relationships between the two agencies, there is no overall, coordinated resource management plan shared by the agencies to ensure that shellfish resources are restored and sustained at levels that balance maintenance of water quality, estuarine nursery functions, and human uses. SCDHEC and SCDNR are evaluating shellfish restoration priorities, but there is no concerted effort to restore areas now closed, or reduce user conflicts.

In 1986, state laws governing the development of the shellfish resource were changed to allow a greater number of commercial harvesters to gain access to commercial and state beds. Additionally, large leases were broken down into smaller units termed Culture Permit Areas (CPAs) or State Shellfish Grounds (SSGs). The permit holders are required by state law to maintain the CPAs by cultivation through shell planting, but the SSGs are managed by the DNR through rotational harvesting although cultivation would be preferred if funding were adequate. An evaluation of the state of the resource between the survey in the nineteenth century, an SCDNR intertidal oyster survey in the 1980s, and the 1986 law should be made to determine the consequences of the 1986 laws on the shellfish resources of the state.

Planning for the sustainability of shellfish resources must be predicated on selecting the most appropriate sites for restoration and protecting remaining beds. Factors such as boat traffic and non-point source pollution in urban areas can be indicators that shellfish beds might not rebound regardless of the resources devoted to their care. In the current economic climate, SCDHEC-OCRM and SCDNR need to be able to prioritize areas for restoration that stand the best chances of success. In addition, as these agencies explore ways to replant beds, they should tap into the experience of the remaining commercial culture permit holders to make sure we are using the most efficient means of restocking. These individuals possess a vast store of information concerning successful replanting efforts and the state needs to take advantage of their knowledge.

A. Problem Statement

To sum up the current situation, with the pace of development in the state, shellfish are at increased risk, and the reduction in shellfish from historic levels is negatively impacting water quality and estuarine habitat. This project is critical to assisting SCDHEC-OCRM and SCDNR in **1) evaluating state laws, policies and the shellfish management framework to determine if adequate protection of South Carolina's shellfish resources exists, 2) investigating methods and incorporating stakeholder expertise to restore the resource, and 3) producing a document that illustrates management issues related to the shellfish resource, which can help to launch SCDHEC-OCRM and SCDNR's efforts to establish an interagency, coordinated state Molluscan Shellfish Management Plan (MSMP).**

B. Ongoing State Efforts

SCDNR's Office of Fisheries Management, Shellfish Management Program, is responsible for the management of the SSGs. Only Culture Permit commercial harvesters are required by law to mitigate, by meeting a replanting quota of shell per year. Commercial and recreational harvesters of SSGs have no husbandry obligations. Culture permit areas make up about 70% of the State's harvestable shellfish beds and are managed by the permit holders to maximize economic return. State law requires that CPAs must be planted with minimum cultch planting each year. The DNR manages SSGs, (78% of the harvestable beds) by rotational openings and closings, often closing some areas for a year or more. Each SSG is evaluated annually as to its previous year's production and apparent current standing stock before decisions are made to open the areas. These annual assessments by necessity

must be made quickly and are dependent upon the experience of management staff. Public Shellfish Grounds (PSGs), which comprise about two percent of the harvestable shellfish beds, are open only to recreational harvesters. DNR staff routinely replants PSGs, but usually only two to four of the PSGs can be replanted each year, based on available funding. Overall harvest levels of shellfish have remained relatively stable for the last ten years, but there is concern that more active management and restoration efforts may be required to provide long-term sustainability.

The 2001-2002 SCDHEC-OCRM Operational Plan identifies a strategic goal to “restore impaired natural resources and sustain them for future use,” with one preferred outcome being an annual increase in the acreage of shellfish beds. To meet the agency benchmark of restoring at least five acres of shellfish beds each year, the joint DHEC and DNR shellfish restoration committee is charged with developing plans and identifying candidate sites for restoration. Creating a management plan for shellfish resources is also prioritized in the Charleston Harbor Project by a task force making recommendations about the management of biological resources in the harbor. Water quality in the Charleston Harbor has no doubt been negatively affected by the reduction of the shellfish resource. The Ashley River, in particular, has lost vast amounts of its historical shellfish resources.

II. Goals and objectives

Goal: The shellfish resources of South Carolina are restored and sustained at levels that balance the ecological benefits and human use of the resources.

SCDHEC-OCRM and SCDNR seek a NOAA Coastal Management Fellow to become an integral part of their Molluscan Shellfish Management Plan project. The Fellow will be fully involved in and synthesize the factual basis for the statewide planning process. The interim products developed as part of the analyses will form the basis of a resource guide created for general distribution to raise awareness of the need for a comprehensive state shellfish management plan.

Objective 1

Analyze state capacity to manage shellfish resources and the development of alternatives to existing regulations where shortfalls may exist; specifically evaluate the state’s management of CPAs and SSGs and related social issues. Develop policy recommendations and initiatives, which may include draft legislation.

Deliverable Product: **Policy analysis paper**

Objective 2

Evaluate SCDHEC’s and DNR’s complimentary roles with respect to public health, shellfish water quality restoration, and resource restoration and preservation. Provide recommendations and policy guidance across agency jurisdictions that would result in more streamlined and effective comprehensive management of the shellfish resources.

Deliverable Product: **Management analysis paper**

Objective 3

Examine the history of the exploitation of shellfish resources in the state, focusing on opinions of long-time shellfish fishermen to obtain views needed to improve the resource and promote restoration.

Deliverable Product: **Interview report paper**

Objective 4

Develop an outreach strategy that underlines the need for a state shellfish conservation and restoration plan to protect shellfish resources and incorporates views from diverse stakeholder groups.

Deliverable Product: **Resource Guide and Public Participation Plan**

III. Milestones and Outcomes

<u>Milestones</u>	<u>Outcomes</u>
April 2003	Attend Fellow matching workshop in Charleston, SC
Summer 2003	Fellow is hosted by OCRM & DNR on preliminary visit
August 1, 2003	Fellow begins orientation by examining a package of information about the regulatory authority of SC DHEC–OCRM and SC DNR and by introduction to staff for orientation into agency activities
August 2003	Fellow integrates into activities of OCRM's Planning Division and SCDNR's Shellfish Management Program Fellow begins conducting preliminary site visits to SSG and commercial shellfish areas
September 2003	Fellow begins examination of existing state law and policy affecting shellfish resources and associated social issues Fellow and mentors complete mentoring statement and project work plan
October 2003	Fellow researches historical and current data about shellfish populations, noting trends
November 2003	Fellow begins exploration of various management measures, paying particular attention to feasibility of implementation
January 2004	Fellow develops survey instrument to be administered in the two sponsoring agencies about the existing shellfish management framework

February 2004	Fellow conducts internal staff review of state shellfish management framework
April 2004	Fellow completes analysis of state shellfish management framework and includes summary of staff reviews in a brief management analysis paper
May 2004	Fellow develops a list of questions for commercial shellfishermen and schedules interviews
June 2004	Fellow conducts interviews with commercial shellfishermen
August 2004	Fellow completes interview report paper
September 2004	Fellow conducts feasibility study of pilot shellfish restoration project
October 2004	Fellow makes site visits to potential sites to verify conditions supportive of restoration
November 2004	Fellow begins publishing process of the Resource Guide, summarizing all previous interim products and introducing potential management measures
February 2005	Completion of Resource Guide
March 2005	Printing and distribution of Resource Guide
April – May, 2005	Dissemination of shellfish resource information on SC DHEC–OCRM and/or SCDNR website
May 2005	Preparation of presentations and fact sheets for MSMP meetings
June 2005	Stakeholder meetings begin

IV. Project Description

For the purposes of the project description, the project has five phases:

1. Orientation
2. Task 1- Shellfish policy analysis
3. Task 2- Management framework analysis
4. Task 3-Empirical analysis of shellfish restoration and pilot project creation
5. Task 4- Shellfish Resource Guide and outreach strategy

Since the MSMP project requires the cooperation and coordination of two SC environmental agencies, orientation will be a critical phase of the project. Orientation will also be beneficial in the development of an interim product, a management framework analysis. During orientation, the Fellow will be given information about SCDHEC-OCRM and SCDNR's role in coastal management, and meet staff involved in the multidisciplinary

work of each agency. The Fellow will be expected to attend all quarterly SCDHEC-OCRM and SCDNR staff meetings and make contributions to agency activities. One of the many benefits South Carolina coastal management will receive from this Fellowship project is enhanced communication between the agencies, with the Fellow playing a large role in this improvement.

Task 1: Shellfish Policy Analysis

Subtasks

1. Complete review of state shellfish management regulations for commercial and recreational harvesting;
2. Compile shellfish population data from historical references through current surveys;
3. Compare CPA to SSG harvest records;
4. Examine the apparent impacts of the 1986 legislation;
5. Establish appropriate management methods to prevent/mitigate overharvesting;
6. Explore potential public-private partnerships to increase shell recycling participation and distribution of substrate to the shellfish beds;
7. Review management methods for shellfish resources used in other coastal states and territories;
8. Create concise report of findings for review and comment of the MSMP mentors;
9. Present findings to SC Marine Advisory Board of SCDNR with recommendation for new legislation, if warranted.

Task 2: Management Framework Analysis

Subtasks

1. Taking the lessons learned during orientation, develop a matrix of state shellfish management responsibility and capacity;
2. Devise a list of questions to administer to staff in SCDNR and SCDHEC-OCRM, which considers, among other points of emphasis, potential areas of improvement in the management framework;
3. Conduct the internal review;
4. Compile the results and make recommendations for improvement in brief report.

Task 3: Empirical Study of Shellfish Restoration

1. Make site visits to potential restoration sites;
2. Develop a list of questions for commercial shellfish men about restoration areas;
3. Compile an "interview aid" packet of site photos and shellfish bed maps;
4. Schedule interviews with commercial shellfish men during their off season;
5. Conduct interviews;
6. Compile results, produce brief report, and make study presentation in SC DNR staff meeting;
7. Explore the feasibility of a restoration pilot project, recommending additional management measures necessary to ensure success.

Task 4: Shellfish Resource Guide

Subtasks

1. Summarize the lessons learned from the first two tasks in a reader-friendly format that illustrates the need for an overall resource protection strategy;
2. Create an attractive layout for the document;

3. Utilize SCDHEC art and printing departments to produce guide;
4. Create web page that summarizes results from project and provides opportunities for public feedback during MSMP process.

By the conclusion of the project, the Fellow will have gained experience initiating a planning process, policy/program evaluation, consultation and development, and opening avenues of stakeholder participation. As an added bonus, the Fellow will gain field experience in the beautiful South Carolina Lowcountry.

V. Fellow Mentoring

The Fellow will receive the benefit of associating with two mentors from the respective project partners who have diverse and extensive experiences in coastal management. Steve Moore, Director of Planning at SCDHEC-OCRM, will be the primary mentor for the MSMP project. Steve has over 20 years of experience with the SC coastal management program, beginning in regulatory roles such as agency Permit Administrator, before become the Director of Planning in 1998. Steve compiled the findings and recommendations of the various task forces from the Charleston Harbor Project and serves as the Office's representative to the SC DHEC Strategic Planning Committee. This body created the agency's Operational Plan, which established restoration of shellfish beds as an agency priority.

Bill Anderson, the secondary mentor, is Assistant Supervisor, SCDNR Shellfish Management Program and has over 25 years of experience in shellfish research and management. Bill currently serves as co-chairman of the SCDHEC/SCDNR Committee Regarding the Classification and Restoration of Coastal Molluscan Shellfish Growing Waters. He has extensive experience in shellfish resource assessment, management and mariculture. In addition, Bill participated as principle investigator in two Charleston Harbor Projects concerning shellfish resources and utilization of oyster shell to suppress shoreline erosion.

VI. Project Partners and Their Roles

SCDNR will instruct the Fellow on current management techniques, procedures, and legal requirements. SCDNR managers and scientists will be available to provide historical perspective and information on the biology of shellfish and current management practices. SCDNR will provide access to historical documents, harvest records, and the most recent GIS data available on the state's shellfish resources. SCDNR managers and scientists will be available to provide historical perspective and information on the biology of shellfish and current management practices. Staff will provide names of experienced commercial shellfishermen for interviews. Additionally, DNR has small boats that will be available for site visits.

Because of its extensive experience with the NOAA Coastal Management Fellow program, SC DHEC-OCRM and its Planning Division will serve as the primary host for the Fellow, and the Fellow will be given the opportunity to assist the Planning Division in ongoing agency planning efforts such as the Murrells Inlet Special Area Management Plan (SAMP), another SAMP in the upper Cooper River area, and a long-term restoration effort

in Filbin Creek, near the Charleston Naval Base. Far from being restricted to the Planning Division, the Fellow will also have opportunities to cross-train with the Regulatory Division of OCRM, by participating in fieldwork and other activities related to salt marsh critical areas, freshwater wetlands and other federal certifications, stormwater permitting, and beachfront management. SCDHEC-OCRM's Planning Division will assist the Fellow in the process of devising and executing the work tasks associated with the Fellow's contribution to the MSMP. Additionally, OCRM will house the Fellow and provide all administrative support, office space, computer software, training, and technical support, such as assistance with web development. OCRM will also ensure the Fellow has the necessary training to complete technical aspects of the project, e.g., GIS/remote sensing.

VII. Cost Share Description

2003-04: SCDHEC-OCRM will provide the necessary \$7,500 in state funds to contribute to the Fellow's per diem. In-kind support in the form of office space, computer equipment and software, administrative support and all other overhead, including necessary training, will be provided in an amount not to exceed \$8,000.

2004-05: SCDHEC-OCRM will provide the necessary \$7,500 in state funds to contribute to the Fellow's per diem. In the second year of the Fellowship, in-kind match will be provided in an amount not to exceed \$3,000.